

S/N 10/771,279

Atty Dkt No. GP-304292 (GM0502PUS)

Listing of Claims

1. (currently amended) A valve actuator assembly for an engine of a vehicle comprising:

a movable engine valve;

a movable roller finger follower operatively engaged with said engine valve;

a rotatable cam;

an intermediate finger follower operatively engaged with said roller finger follower and said cam; and

at least one actuator operatively cooperating with said intermediate finger follower to position said intermediate finger follower in two directions independent of one another relative to said cam to move said roller finger follower to position said engine valve at a desired, decoupled lift and phasing.

2. (original) A valve actuator assembly as set forth in claim 1 wherein said roller finger follower has one end in contact with one end of said engine valve.

3. (original) A valve actuator assembly as set forth in claim 2 including a hydraulic lash adjuster pivotally connected to the other end of said roller finger follower.

4. (original) A valve actuator assembly as set forth in claim 1 wherein said at least one actuator is pivotally connected to one end of said intermediate finger follower.

5. (original) A valve actuator assembly as set forth in claim 1 wherein said at least one actuator moves said intermediate finger follower in at least one of a horizontal direction and a vertical direction.

6. (original) A valve actuator assembly as set forth in claim 1 wherein said at least one actuator comprises a first actuator pivotally connected to said intermediate finger follower to move said intermediate finger follower in a horizontal direction and a second actuator

S/N 10/771,279

Atty Dkt No. GP-304292 (GM0502PUS)

operatively cooperating with said first actuator to move said first actuator and said intermediate finger follower in a vertical direction.

7. (original) A valve actuator assembly as set forth in claim 1 wherein said at least one actuator comprises a first actuator and a second actuator pivotally connected to said intermediate finger follower to move said intermediate finger follower in a horizontal direction and said first actuator operatively cooperating with said second actuator to move said second actuator and said intermediate finger follower in a vertical direction.

8. (original) A valve actuator assembly as set forth in claim 1 wherein said intermediate finger follower is operatively engaged with said rotatable cam through a first roller, and said intermediate finger follower is operatively engaged with said movable roller finger follower through a second roller to affect movement of the engine valve.

9. (original) A valve actuator assembly as set forth in claim 8 further comprising a stationary ramp which guides movement of said second roller, said ramp having a curved portion to control the vertical displacement of the second roller, thereby controlling valve seating.

10. (original) A valve actuator assembly as set forth in claim 9, wherein said second roller is in continuous rolling contact with said stationary ramp, said intermediate finger follower, and said movable roller finger follower.

11. (original) A valve actuator assembly as set forth in claim 9, wherein said second roller is spring-biased toward said intermediate finger follower.

12. (original) A valve actuator assembly as set forth in claim 1 wherein said intermediate finger follower pivots about a first pivot point which is connected to said at least one actuator, and said roller finger follower pivots about a second pivot point.

S/N.10/771,279

Any Dkt No. GP-304292 (GM0502PUS)

13. (original) A valve actuator assembly as set forth in claim 12 including a controller electrically connected to said at least one actuator to energize and de-energize said at least one actuator.

14. (currently amended) A valve actuator assembly comprising:

- a movable engine valve;
- a movable roller finger follower operatively engaged with said engine valve;
- a rotatable cam;
- an intermediate finger follower operatively engaged with said roller finger follower; and
- a first actuator operatively connected to said intermediate finger follower to move said intermediate finger follower in either one of a horizontal direction and a vertical direction and a second actuator operatively cooperating with said first actuator to move said first actuator and said intermediate finger follower in the other one of a horizontal direction and a vertical direction independent of movement in said one of a horizontal and a vertical direction to position said intermediate finger follower relative to said cam to move said roller finger follower to position said engine valve at a desired, decoupled lift and phasing.

15. (original) A valve actuator assembly as set forth in claim 14 wherein said roller finger follower has one end in contact with one end of said engine valve.

16. (original) A valve actuator assembly as set forth in claim 15 including a lash adjuster pivotally connected to the other end of said roller finger follower.

17. (original) A valve actuator assembly as set forth in claim 14 wherein either one of said first actuator and said second actuator is pivotally connected to one end of said intermediate finger follower.

18. (original) A valve actuator assembly as set forth in claim 14 wherein said first actuator and said second actuator are of a linear type to generate linear motion.

S/N 10/771,279

Atty Dkt No. GP-304292 (GM0502PUS)

19. (original) A valve actuator assembly as set forth in claim 17 including a controller electrically connected to said first actuator and said second actuator to energize and de-energize said first actuator and said second actuator.

20. (original) A valve actuator assembly as set forth in claim 14 including a housing having a chamber.

21. (original) A valve actuator assembly as set forth in claim 18 including an engine valve spring disposed in said chamber to bias said engine valve toward a closed position.

22. (original) A valve actuator assembly as set forth in claim 14 wherein said intermediate finger follower is operatively engaged with said rotatable cam through a first roller, and said intermediate finger follower is operatively engaged with said movable roller finger follower through a second roller to affect movement of the engine valve.

23. (original) A valve actuator assembly as set forth in claim 22 further comprising a stationary ramp which guides movement of said second roller, said ramp having a curved portion to control the vertical displacement of the second roller, thereby controlling valve seating.

24. (original) A valve actuator assembly as set forth in claim 23, wherein said second roller is in continuous rolling contact with said stationary ramp, said intermediate finger follower, and said movable roller finger follower.

25. (original) A valve actuator assembly as set forth in claim 24, wherein said second roller is spring-biased toward said intermediate finger follower.

26. (original) A valve actuator assembly as set forth in claim 23, wherein said stationary ramp is mounted to an engine block.

S/N 10/771,279

Atty Dkt No. GP-304292 (GM0502PUS)

27. (currently amended) A method of operating a valve actuator assembly for a vehicle comprising:

providing a movable engine valve;
providing a movable roller finger follower operatively engaged with the engine valve;
providing a cam and rotating the cam;
providing an intermediate finger follower operatively engaged with the roller finger follower; and
actuating at least one actuator operatively cooperating with the intermediate finger follower in vertical and horizontal directions independent of one another, positioning the intermediate finger follower relative to the cam, and positioning the engine valve at a desired, decoupled lift and phasing.

28. (currently amended) A valve actuator assembly for an engine of a vehicle comprising:

a movable engine valve;
a movable roller finger follower operatively ~~engaged~~ engaged with said engine valve;
a rotatable cam;
an intermediate finger follower operatively engaged with said cam through a first roller, and operatively engaged with said roller finger follower through a second roller, said second roller being guided by a stationary curved ramp; and
at least one actuator operatively cooperating with said intermediate finger follower to position said intermediate finger follower in two directions relative to said cam to move said roller finger follower to position said engine valve at a desired lift and phasing.